

**What is claimed is:**

1. A system for collecting vehicle data and diagnosing a vehicle, comprising:  
a USB hard drive having vehicle-related data containing basic vehicle information  
5 data and vehicle maintenance information data; and  
a USB control unit connected to electronic control units, mechanical control units,  
and sensors within the vehicle, and for collecting vehicular information, reading the  
vehicle-related data from the USB hard drive, or storing the collected vehicular  
information in the USB hard drive.  
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2. The system as claimed in claim 1, further comprising a terminal for reading the  
vehicle-related data from the USB hard drive, carrying out diagnoses, and storing results in  
the USB hard drive.
- 15 3. The system as claimed in claim 1 or 2, wherein the basic vehicle information  
data of the USB hard drive includes information data as to vehicle-inherent information  
data and information data as to an owner of the vehicle, and the vehicle maintenance  
information data of the USB hard drive includes information data outputted from various  
vehicular control units and sensors and data inputted from exterior as to vehicle diagnoses  
20 and maintenance.
4. The system as claimed in claim 3, wherein the vehicle-inherent information  
data is stored in a memory part included in the USB control unit upon vehicle delivery, and  
stored from the USB control unit to the USB hard drive upon resetting the USB hard drive.

5. The system as claimed in claim 4, wherein the vehicle-inherent information data includes at least one of a vehicle delivery date, frame number, engine number, vehicle kind, year, and displacement volume as to the vehicle.

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6. The system as claimed in claim 3, wherein the information data as to the vehicle owner includes at least one of purchase date, vehicle owner's name, resident registration number, driver's license number, password, and email address.

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7. The system as claimed in claim 1 or 2, wherein the USB control unit includes:

a vehicle interface for inputting data as to vehicle states from the mechanical control units, the electronic control units, and the sensors inside the vehicle;

a first memory for storing data indicating vehicle states collected from the control units and sensors through the vehicle interface;

15 a second memory for storing data transferred from the USB hard drive as to vehicle diagnosis and maintenance items;

a third memory for storing vehicle-inherent information data;

a USB communication port for interfacing the USB hard drive and the USB control unit;

20 a processor for controlling the vehicle interface, the first memory, the second memory, the third memory, and the USB communication port, and performing calculation; and

a memory part including a program for controlling the processor.

8. The system as claimed in claim 7, wherein the USB control unit includes an exterior display device for displaying present status of the USB control unit or displaying communication states between the USB hard drive and the USB control unit and vehicle trouble messages.

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9. The system as claimed in claim 8, wherein the exterior display device is implemented in connection with an audio display, navigation system, or an auto PC which are mounted in the vehicle.

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10. The system as claimed in claim 7, wherein the first memory includes at least one of information as to vehicular normal or abnormal state which is inputted from a self diagnosis connector mounted in the vehicle, and represented as error codes of the vehicle, a vehicle speed on the run detected from sensors attached in the vehicle, an average RPM obtained by an injector driving signal while driving, and an engine state.

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11. The system as claimed in claim 7, wherein the second memory includes more than one out of A/S dates, A/S items, maintenance contents, replacement parts, and maintenance shop records as data as to vehicle maintenance.

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12. The system as claimed in claim 7, wherein the vehicle interface includes:

a connector interface connecting plural self diagnosis connectors and the USB control unit;

a sensor interface for transferring vehicle sensor output values to the USB control unit; and

an interrupt interface for decoding interrupts for changing convenience apparatus setting values stored in the USB control unit, when convenience apparatus setting values are changed on the run, and for transferring convenience apparatus change signals.

5           13. The system as claimed in claim 12, wherein the sensor interface includes an A/D converter for converting signals inputted from vehicle speed sensors, injector driving signals, throttle valve position sensors, air volume sensors, temperature sensors, and intake air sensors, and for transferring the signals to a CPU.

10           14. The system as claimed in claim 2, wherein the terminal includes:  
a USB driver for reading the vehicle-related data from the USB hard drive and for storing processed vehicle-related data in the USB hard drive; and  
a data processing means for outputting the diagnosis results and maintenance items as to the data read from the USB hard drive to the USB driver and for storing the  
15 diagnosis results and maintenance items in the USB hard drive.

15           15. The system as claimed in claim 14, wherein the data processing means includes a personal computer (PC) for executing a vehicle diagnosis program as to the vehicle-related data read from the USB hard drive, diagnosing the vehicle, and displaying  
20 maintenance items based on diagnosis results.

16. The system as claimed in claim 14, further comprising a central A/S center main server connected to the terminal through a network, and for checking the vehicle diagnoses and maintenance items as to the data of the USB hard drive received from the

terminal, and transferring to the terminal and storing the diagnosis results and required maintenance items in the USB hard drive.

17. The system as claimed in claim 16, wherein the data processing means is a  
5 mobile communication terminal or a PC connectable to the network.

18. The system as claimed in claim 16, wherein the central A/S center main server includes:

a knowledge database containing error codes and combined error codes occurrable  
10 as to vehicle trouble states, and diagnosis rules and procedures as to the codes; and

an inference means for diagnosing the vehicle by applying to the data received from the USB hard drive the vehicle diagnosis rules and diagnosis determination procedures received from the knowledge database.

15 19. The system as claimed in claim 18, wherein the central A/S center main server further comprises a vehicle diagnosis result database for receiving and storing the vehicle diagnosis results from the inference means, and storing through a web interface consumers' complaints and vehicle problems as to the diagnosis results.

20 20. The system as claimed in claim 19, wherein the central A/S center main server further comprises a knowledge acquisition system for converting the diagnosis results stored in the vehicle diagnosis result database to a format storable in the knowledge database,

and the inference means diagnoses the vehicle by applying to the data received

from the USB hard drive the vehicle diagnosis rules and diagnosis determination procedures received from the knowledge database.